

Patent claims

1. A transparent, luminescent plastic glass which contains luminescent nanoparticles.
2. The plastic glass as claimed in claim 1, characterized in that the nanoparticles are selected from luminescent materials (luminescent pigments) and/or luminescent materials doped with transition metals and/or lanthanides.
3. The plastic glass as claimed in claim 1 or 2, characterized in that the nanoparticles in the glasses are preferably present in an amount of from 0.1 to 20% by weight, based on the amount of polymer.
4. The plastic glass as claimed in either of claims 2 and 3, characterized in that the luminescent material is selected from  $Y_2O_3$ ,  $YVO_4$ ,  $Zn_2SiO_4$ ,  $CaWO_4$ ,  $MgSiO_3$ ,  $BaF_2$ ,  $SrAl_2O_4$ ,  $ZnO$ ,  $ZnS$ ,  $Gd_2O_3S$ ,  $La_2O_2S$ ,  $BaFCl$ ,  $LaOBr$ ,  $Ca_{10}(PO_4)_6(F,Cl)_2$ ,  $BaMg_2Al_6O_{27}$ ,  $CeMgAl_{11}O_{19}$ ,  $ZnSe$  or  $CdS$  and any desired mixtures of the above.
5. The plastic glass as claimed in claim 4, characterized in that the luminescent material is selected from  $ZnS$  and  $ZnO$ .
6. The plastic glass as claimed in claim 4 or 5, characterized in that the luminescent material is doped with Al, transition metals, such as Cu, Ag or Mn, or rare earth metals, such as Eu or Yb.
7. The plastic glass as claimed in any of claims 1 to 6, characterized in that the plastic is a polymer or polymer blend selected from polyacrylates and derivatives thereof, polymethacrylates, poly-

carbonates, polystyrenes, epoxides, polyethylene terephthalates, ethylene-norbornene copolymers and any desired copolymers of the corresponding monomers.

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8. A method for producing a transparent, luminescent plastic glass, characterized in that one or more luminescent materials are mixed with a polymer precursor or a solution of the polymer precursor in a first stage of the method and the mixture obtained is polymerized in a manner known per se in a second stage of the method.

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9. The method as claimed in claim 8, characterized in that the luminescent materials are obtained by a precipitation reaction from an alcoholic solution.

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10. The method as claimed in claim 8 or 9, characterized in that the luminescent materials are dispersed in the polymer precursor or a portion thereof or a solution of the polymer precursor or a portion thereof.

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11. The method as claimed in any of claims 8 to 10, characterized in that the polymer precursor is selected from monomers or polymerizable oligopolymers which are liquid at processing temperature or are soluble in a solvent.

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12. The method as claimed in any of claims 8 to 11, characterized in that the luminescent materials are present in the mixture with the polymer in a particle size of less than 100 nm.

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13. The method as claimed in any of claims 8 to 12, characterized in that the plastic glass has the shape of a film or an article.

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14. The use of the transparent, luminescent plastic glasses as claimed in any of claims 1 to 7 for producing illuminating elements, luminescent displays, including inscriptions on objects, such as glasses, for marking plastics, etc.
15. The use of the transparent, luminescent plastic glasses as claimed in any of claims 1 to 7 for producing coatings on inorganic or organic glasses.